Environment Canada / Environnement Canada

National Overview

National Pollutant Release Inventory

Canadian Environmental Protection Act 1999

www.ec.gc.ca/npri

Reporting Requirements

Canada

National and Regional National Pollutant Release Inventory (NPRI) Offices

National Office
National Pollutant Release Inventory
Environment Canada
Place Vincent Massey, 9th Floor
351 St. Joseph Boulevard
Gatineau, QC
K1A 0H3
Tel: (819) 953-1656
Fax: (819) 994-3266
E-mail: NPRI@ec.gc.ca

Newfoundland and Labrador, Prince Edward Island, New Brunswick and Nova Scotia
National Pollutant Release Inventory
Environment Canada
Queen Square, 16th Floor
45 Alderney Drive
Dartmouth, NS
B2Y 2N6
Tel: (902) 426-4482 / 426-4805 / 426-5037
Fax: (902) 490-0722
E-mail: NPRI_ATL@ec.gc.ca

Quebec
National Pollutant Release Inventory
Environment Canada
105 McGill Street, 4th Floor
Montreal, QC
H2Y 2E7
Tel: (514) 283-7303 / 283-0248 / 496-1832
Fax: (514) 496-6982
E-mail: INRP_QC@ec.gc.ca

Ontario
National Pollutant Release Inventory
Environment Canada
4905 Dufferin Street, 2nd Floor
Downsview, ON
M3H 5T4
Tel: (416) 739-5955 / (416) 739-5894
Fax: (416) 739-4326
E-mail: NPRI_ONTARIO@ec.gc.ca

NPRI/ON MOE Reg.127
Joint Technical Assistance Centre
Tel: (416) 739-4707

Manitoba, Saskatchewan, Alberta, Northwest Territories and Nunavut
National Pollutant Release Inventory
Environment Canada
Twin Atria #2, Room 200
4999-98 Avenue
Edmonton, AB
T6B 2X3
Tel: (780) 951-8989
Fax: (780) 951-8808 / 495-2615
E-mail: NPRI_PNR@ec.gc.ca

British Columbia and Yukon
National Pollutant Release Inventory
Environment Canada
#201-401 Burrard Street
Vancouver, BC
V6C 3S5
Tel: (604) 666-3221 / 666-3890 / 666-9864
Fax: (604) 666-6800
E-mail: NPRI_PYR@ec.gc.ca

National Pollutant Release Inventory
Environment Canada
91782 Alaska Highway
Whitehorse, YT
Y1A 5B7
Tel: (867) 667-3402
Fax: (867) 667-7962
E-mail: NPRI_YK@ec.gc.ca

NPRI Software Help Desk
Tel: (819) 994-1672
E-mail: nprihelpdesk@ec.gc.ca

ISBN 0-662-37186-0
Catalogue No. En49-16/1-2002E

105-03139/

National Overview – 2002

National Pollutant Release Inventory

Reporting Requirements

Canadian Environmental Protection Act, 1999

Table of Contents

1 Introduction 1

2 Who Reports to the 2002 NPRI? 2

2.1 NPRI Reporting Criteria 2

2.2 Facility Criteria 5

2.3 Employee Criteria 5

2.4 Substances and their Thresholds 6

2.4.1 Criteria Air Contaminants (CAC) 6

2.5 What Is Reported to the NPRI? 6

2.5.1 Industrial Classification Systems 7

2.6 Reporting On-site Releases, Final Disposal Activities and Off site Transfers to the NPRI 8

2.6.1 On-site Releases 8

2.6.2 Final Disposal Activities 8

2.6.3 Off-site Transfers for Treatment Prior to Final Disposal 8

2.6.4 Off-site Transfers for Recycling and Energy Recovery 9

2.7 Reporting Pollution Prevention to the NPRI 10

2.8 Reporting Confidential Information to the NPRI 10

2.9 Factors to Consider When Using NPRI Data 11

2.10 Reporting to Other Inventory Programs 13

2.10.1 Environmental Performance Agreements (EPAs) 13

2.10.2 Ontario Ministry of the Environment 13

2.10.3 Alberta Environment 13

2.10.4 Canadian Chemical Producers' Association (CCPA) 13

3 References and Bibliography 14

3.1 Government of Canada 14

3.2 Web Sites for Substance Information 15

3.2.1 Environment Canada 15

3.2.2 Health Canada 15

3.2.3 International Links 15

3.3 Additional Sources of Information 16

Appendix A: Overview of the NPRI 17

Appendix B: Detailed Data Elements Reported to the NPRI 20

1. Introduction

The National Pollutant Release Inventory (NPRI) is at the centre of the Government of Canada's efforts to track toxic substances. It is a legislated inventory of pollutants released to the environment. The NPRI was established in 1992 to inform Canadians about releases of pollutants from facilities located in their communities, including the amounts discharged to the air, water and land and by underground injection and the amounts sent to other facilities for disposal, treatment or recycling and energy recovery. The NPRI is constantly evolving. Since it was established, substances have been added and deleted, the thresholds at which substances are reported have been adjusted, and the scope of the inventory has been expanded to collect data on recycling and pollution prevention activities. Further refinements are planned for future years. Please refer to **Appendix A** for information on:

- what is new for the 2002 NPRI,
- the NPRI substance list for 2002,
- the 2002 National Overview Series, and
- new groupings for releases and transfers.

See **Appendix B** for definitions of releases, disposals and transfers.

In 2002, criteria air contaminants (CAC) were added to the NPRI for the first time. As a result, the number of NPRI substance reports in the 2002 NPRI has almost doubled compared to 2001. For the purpose of comparing the 2002 data with those submitted in 2001, the information collected on CAC for 2002 are summarized separately. All non-CAC substance data collected for the 2002 reporting year will be referred to as "NPRI pollutants". The reasons for separating CAC substance data from non-CAC data are as follows:

- The information reported for CAC is limited to releases to air. However, the reports of other pollutants cover releases to all environmental media – air, water and land. They also cover disposal and recycling.
- Reporting separately allows for better comparison to historic NPRI data.
- The information for CAC from point sources for 2002 can be presented along with historic information on area sources to give a more complete picture of overall releases.

There are relatively few CAC, and they have always been discussed individually because each one poses different risks to human health and the environment. NPRI pollutants are sometimes grouped together to reveal trends, but it is not correct to add the CAC to the other NPRI pollutants because many NPRI pollutants are also volatile organic compounds (VOC) and this would lead to double counting. (See *2002 National Overview – Reporting Requirements*, **section 2.9**, for more information on double counting.)

The complete list of CAC and non-CAC data for the 2002 reporting year can be found on the NPRI Web site at **www.ec.gc.ca/npri.**

2. Who Reports to the 2002 NPRI?

In general, any person who owns or operates a facility in Canada was required to report to the NPRI for 2002 if the facility met or exceeded all criteria for the type of activity, the number of employees or hours worked, and, in most cases, the amount of NPRI-listed substances manufactured, processed or otherwise used in specified amounts (referred to as "thresholds"). For CAC substances, any industrial or commercial facility may meet the reporting threshold (see **table 2–2**).

There are also specific activities or substances that must always be reported regardless of employee hours. An example is CAC releases from stationary combustion equipment or releases by the wood preservation sector.

For some substances, such as mercury, cadmium, arsenic and lead, the reporting thresholds have been lowered due to the concern about releases of even small amounts.

Any facility in Canada meeting the NPRI reporting criteria for the 2002 reporting year was required to submit a report to Environment Canada by June 1, 2003. If a facility reported to the NPRI in 2001 but did not meet the reporting criteria in 2002, it was required to report this change in status to Environment Canada.

2.1 NPRI Reporting Criteria

The criteria presented in the following sections applied to the 2002 reporting year. They are summarized in **tables 2–1** and **2–2**. Note that reporting criteria for CAC have been listed separately because they are new for 2002.

Table 2–1

REPORTING CRITERIA FOR THE 2002 NPRI POLLUTANTS, PART 1–3 SUBSTANCES

	Part 1A Core NPRI	Part 1B	Part 2 Polycyclic aromatic hydrocarbons (PAHs)	Part 3 Dioxins/Furans and Hexachlorobenzene
Substances	241 core substances	Mercury in any concentration; cadmium, arsenic, lead (and their compounds), hexavalent chromium compounds and tetraethyl lead in concentrations of 0.1% or more by weight	17 different substances	• Hexachlorobenzene (HCB) • Polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans (dioxins and furans)
Employee	Employees worked a total of 20 000 hours or more during the year, or the facility was used for certain types of incineration, wood preservation, fuel terminal operation or wastewater treatment.	Employees worked a total of 20 000 hours or more during the year, or the facility was used for certain types of incineration, wood preservation, fuel terminal operation or wastewater treatment.	Employees worked a total of 20 000 hours or more during the year, or the facility was used for certain types of incineration or wood preservation, fuel terminal operation or wastewater treatment.	Employees worked a total of 20 000 hours or more during the year in certain sectors, or the facility was used for certain types of incineration, wood preservation, fuel terminal operation or wastewater treatment.
Substance Threshold	The substance was manufactured, processed or otherwise used in a quantity of 10 tonnes or more during the year, and the concentration of the substance was 1% or more by weight (except by-products*).	Mercury and cadmium were manufactured, processed or otherwise used in a quantity of 5 kg or more during the year (at any concentration), and 50 kg or more for arsenic, hexavalent chromium, lead and tetraethyl lead.	One or more PAHs were incidentally manufactured and released or transferred, and together totalled 50 kg.	No quantitative threshold – all facilities that used or engaged in the identified activities that have the potential to incidentally manufacture dioxins/furans or HCB must submit an NPRI report. The CEPA reduction target is virtual elimination, meaning below levels that can be reliably detected.
Other			Any PAH was released or transferred from a wood preservation process using creosote, regardless of the quantity of PAH released or transferred or the numbers of hours worked by employees.	A facility used for or engaged in wood preservation using pentachlorophenol must report for dioxins/furans and HCB regardless of the quantities released or transferred or the number of hours worked by employees.

**By-products must be included in the calculation of the 10-tonne threshold, even if they are at a concentration of less than 1% by weight. In 2002 the definition of by-product was altered to mean a substance that is incidentally manufactured, processed or otherwise used at the facility at any concentration and is released on site to the environment, released to surface waters or transferred off site for disposal.*

Table 2–2

REPORTING CRITERIA FOR CRITERIA AIR CONTAMINANTS (CAC), PART 4

Substance	Substance Threshold (tonnes)	Employee Criteria	Other
Nitrogen oxides (expressed as NO_2) Sulphur dioxide (SO_2) Carbon monoxide Total particulate matter (TPM), not including road dust	20	Employees worked a total of 20 000 hours or more during the year, or the facility was used for certain types of incineration, wood preservation, fuel terminal operation or wastewater treatment.	Some activities and facilities require reporting of CAC from stationary combustion equipment only.
Particulate matter of greater than or equal to 2.5 microns in size ($PM_{2.5}$), not including road dust	0.3		
Particulate matter of greater than or equal to 10 microns in size (PM_{10}), not including road dust	0.5		
Volatile organic compounds (VOCs)	10		

2.2 Facility Criteria

A facility, or any part thereof, was required to report to the NPRI if it met the employee criteria and substance thresholds, unless it was used exclusively for one of the following activities:

- education or training of students, such as universities, colleges and schools;
- research or testing;
- maintenance and repair of transportation vehicles, such as automobiles, trucks, locomotives, ships or aircraft, except painting and stripping of vehicles or their components or rebuilding or remanufacturing of vehicle components;
- distribution, storage or retail sale of fuels, except as part of terminal operations, wholesale or retail;
- sale of articles or products that contain NPRI-listed substances, provided that the substances are not released to the environment during normal use at the facility;
- retail sale of NPRI-listed substances;
- growing, harvesting or management of renewable natural resources, such as fisheries, forestry or agriculture, but not the processing or other use of renewable natural resources;
- mining, but not the further processing or other use of mined materials;
- drilling or operating wells to obtain oil and gas products, but not those facilities engaged in further processing of these oil and gas products; or
- the practice of dentistry.

Facilities used exclusively for one of these activities were still required to report for CAC releases from stationary combustion equipment.

2.3 Employee Criteria

A facility was required to report to the NPRI if, during the 2002 calendar year:

- the number of hours worked by all employees totalled 20 000 or more; or
- the facility was used for any of the following activities to which the 20 000-hour employee threshold did not apply:
  - non-hazardous solid-waste incineration of 26 tonnes or more of waste per year, including small combustion units, conical burners and beehive burners;
  - biomedical hospital waste incineration of 26 tonnes or more of waste per year;
  - incineration of hazardous waste;
  - incineration of sewage sludge;
  - wood preservation (using heat or pressure treatment, or both);
  - terminal operations related to petroleum oils and fuels, which are sources of some NPRI pollutants, including VOCs; or
  - wastewater collection systems discharging 10 000 m^3 or more per day, into surface waters (a wastewater system for NPRI reporting purposes includes both the treatment and collection components).

The 20 000-hour employee threshold was removed for facilities used for these activities because they were known to release significant amounts of NPRI pollutants to the environment even though they might not meet the employee threshold.

Refer to the *Guide for Reporting to the National Pollutant Release Inventory 2002* for more details.

2.4 Substances and their Thresholds

For the 2002 reporting year, the NPRI substance list was divided into five parts – 1A, 1B, 2, 3 and 4 – each with different reporting thresholds. **Tables 2–1** and **2–2** show the reporting criteria for substances in each of the five parts. For more details, refer to the *Guide for Reporting to the National Pollutant Release Inventory 2002*.

Among the changes to the NPRI list of substances for 2002 was the reduction of the reporting thresholds for arsenic, cadmium, lead, tetraethyl lead and hexavalent chromium compounds. These substances together with mercury now comprise the 1B category of substances.

2.4.1 Criteria Air Contaminants (CAC)

The addition of CAC for the 2002 reporting year is a significant expansion of the NPRI. During 2001, Environment Canada held extensive consultations with stakeholders about the addition of CAC to the 2002 NPRI. CAC comprise oxides of nitrogen (NO_x), sulphur dioxide (SO_2), carbon monoxide (CO) volatile organic compounds (VOCs) and particulate matter, including total particulate matter (TPM), particulate matter with a diameter less than or equal to 10 microns (PM_{10}) and particulate matter with a diameter less than or equal to 2.5 microns ($PM_{2.5}$).

The federal government, recognizing that clean air is a priority for Canadians, is working to improve air quality. In December 2000, Canada and the United States signed the Ozone Annex to the 1991 Canada–United States Air Quality Agreement. The Annex includes commitments by both countries to reduce emissions of NO_x and VOCs from power plants and transportation sources, as well as taking initial action for other industrial sources. Information about CAC emissions collected by the NPRI will be used to track Canada's progress on meeting these commitments.

Other federal initiatives that require the CAC data include:

- the Canada-wide Acid Rain Strategy,
- Canada-wide Standards for Particulate Matter (PM) and Ozone,
- the Convention on the Long-Range Transport of Air Pollutants, and
- the development of ambient air quality objectives.

2.5 What Is Reported to the NPRI?

A report includes information specific to the facility, such as its name, number of employees, contact information and industrial classification codes. Every report for an NPRI substance includes an indication of whether the substance was manufactured, processed or otherwise used and the nature of such activities and uses during the year. Specifically, facilities reported:

- the quantity released on site to air, water and land;
- the quantity sent for disposal on site by type and nature of treatment, destruction or containment;
- the quantity transferred off site for disposal, and the nature of treatment, destruction or containment;
- the quantity transferred off site for recycling, subdivided by recovery of energy and various materials, such as solvents, catalysts and metals;
- the reasons for changes in reported releases or transfers compared with the previous year; and
- pollution prevention activities.

Facilities were also encouraged to explain year-to-year changes. They were required to provide information to which they could reasonably be expected to have access. To quantify releases and transfers, a range of methods may be used. In declining order of expected accuracy for most calculations, these include:

- direct measurement or monitoring – an example is the measurement of the volume of gas discharged from an industrial stack and the concentration of a given pollutant in the stack flow;
- mass balance calculations – knowledge of the quantity of a substance going into an industrial process and what happens to it as part of the process (whether it is consumed, chemically transformed, etc.) to allow a calculation of how much will leave the process and in what form;
- emission factors – published models or equations that predict the amount of pollutant(s) generated as a function of a measurable quantity at the facility (e.g., kilograms of benzene emitted per cubic metre of fuel burned); the factors are typically developed based on actual measurement; and
- engineering estimates – estimation method based on physical and/or chemical properties of substances and process conditions.

Note: For detailed information on methods of estimation for releases and transfers of NPRI pollutants, please refer to the *Guide for Reporting to the National Pollutant Release Inventory 2002*.

2.5.1 Industrial Classification Systems

Facilities were also required to report their industrial classifications using the North American Industry Classification System (NAICS) and the Standard Industrial Classification (SIC) System. Industrial classifications are a means of identifying the type of enterprises and industry. The NPRI has adopted NAICS as the standard for identifying industrial sectors to enable better comparisons of NPRI data with similar inventories in the United States and Mexico. For the 2002 reporting year, the NPRI continued to collect Canadian and American SIC data to retain continuity with historical data. A description of the two systems is given below:

- **North American Industry Classification System (NAICS):** Statistics Canada, the U.S. Office of Management and Budget and Mexico's Instituto Nacional de Estadistica Geografia e Informatica, developed the NAICS to enable the respective national agencies to collect comparable statistical data. It has replaced the 1980 SIC system as the standard for classifying industries by Statistics Canada. More information about NAICS can be found on its Web site at **www.statcan.ca**.
- **Standard Industrial Classification (SIC) Codes:** SIC codes are numerical identifiers for different types of businesses and industries. The first two digits of a four-digit SIC code define a major business sector, while the last two denote a facility's specialty within that sector.

Most facilities reporting to the NPRI use an electronic reporting form. Each year, reporting software and instructions are mailed to facilities that reported to the NPRI for the previous year. Other facilities required to report to the NPRI must register at one of the NPRI regional offices to receive a copy of the reporting software and instructions.

Prior to each NPRI reporting year, notification with respect to the substances, the criteria and the information to be reported are published in the *Canada Gazette*, Part I. NPRI reports for a given calendar year must be submitted to Environment Canada by June 1 of the next year.

2.6 Reporting On-site Releases, Final Disposal Activities and Off-site Transfers to the NPRI

For the purposes of publicly reporting 2002 NPRI information, the groupings discussed below were used in the development of the 2002 National Overview series.

2.6.1 On-site Releases

An on-site release is a discharge of an NPRI-listed pollutant to the environment within the physical boundaries of the facility. This includes:

- emissions to air – discharges through a stack, vent or other point release, losses from storage and handling of materials, fugitive emissions, spills and accidental releases and other non-point releases;
- releases to surface waters – discharges, spills and leaks, but not including discharges to municipal wastewater treatment plants (which are reported under off-site transfers for treatment); and
- releases to land – spills, leaks and other.

2.6.2 Final Disposal Activities

The following activities or operations are included in the category classified as "final disposal" – on site and off site:

- Containment – two forms of containment are identified:
  - i) landfill, and
  - ii) other storage;
- underground injection;
- land treatment – for the purpose of land application or land;
- farming; and
- off-site final disposal for storage.

Please note that these groupings are different than those found in the *Guide for Reporting to the National Pollutant Release Inventory 2002*. Please refer to **Appendix A** for further information on new groupings for releases, disposal and transfers.

2.6.3 Off-site Transfers for Treatment Prior to Final Disposal

A shipment of an NPRI-listed pollutant may be transferred to an off-site location for treatment prior to final disposal. The treatment processes include:

- physical treatment (e.g., drying, evaporation, encapsulation or vitrification);
- chemical treatment (e.g., precipitation, stabilization or neutralization);
- biological treatment (e.g., bio-oxidation);
- incineration or thermal treatment in which energy is not recovered; and
- treatment at a municipal sewage treatment plant.

2.6.4 Off-site Transfers for Recycling and Energy Recovery

NPRI-listed substances may be transferred to an off-site location for recycling and energy recovery. "Recycling" refers to activities that keep a material or a component of the material from becoming a waste destined for final disposal. Nine types of recycling operations are identified:

- recovery of solvents,
- recovery of organic substances (other than solvents),
- recovery of metals and metal compounds,
- recovery of inorganic materials (other than metals),
- recovery of acids and bases,
- recovery of catalysts,
- recovery of pollution abatement residues,
- refining or reuse of used oil, and
- other recovery, reuse or recycling activities.

An NPRI substance may be sent for energy recovery when the substance or the material containing it has sufficient energy content (BTU value) to allow its use as an alternative to fossil fuels or other forms of energy.

2.7 Reporting Pollution Prevention to the NPRI

Pollution prevention is defined in the *Canadian Environmental Protection Act, 1999* (CEPA 1999) as "the use of processes, practices, materials, products, substances or energy that avoid or minimize the creation of pollutants and waste, and reduce the overall risk to the environment or human health." Pollution prevention is identified throughout the Act as the priority means of protecting the environment and human health.

Pollution prevention seeks to eliminate the causes of pollution rather than manage it after it has been created. Beginning in 1997, qualitative reporting of pollution prevention activities, through the use of checklists, has been required for listed substances under the NPRI program. This reporting allows facilities to report publicly whether pollution prevention activities are being undertaken throughout their operations, the extent of such activities and any reductions that resulted.

Pollution prevention activities may include, but are not limited to, materials or feedstock substitution; product design or reformulation; equipment or process modification; spill and leak prevention; on-site reuse, recovery or recycling; improved inventory management or purchasing techniques; and good operating practices and training.

Opportunities for pollution prevention measures can be found in many areas of an industrial operation, including material and resource feedstock, equipment and processes, operational practices, products and non-product outputs and business management systems. Pollution prevention encourages the kinds of changes that are likely to lead to reductions in emissions, waste and use of pollutants. It is important to note that on the 2002 NPRI reporting form, facilities were required to give a reason for any change in their on-site releases, off-site transfers and off-site recycling from the previous year. One of the possible reasons for such changes in these values is the adoption of pollution prevention measures.

2.8 Reporting Confidential Information to the NPRI

Pursuant to sections 51 and 313 of CEPA 1999, any person who provides information in response to an NPRI Canada Gazette notice may submit a written request that it be treated as confidential based on the reasons set out in section 52 of CEPA 1999.

Section 52 of CEPA 1999 provides that:

- Despite Part 11, a request under section 51 may only be based on any of the following reasons:
    - the information constitutes a trade secret;
    - the disclosure of the information would likely cause material financial loss to, or prejudice to the competitive position of, the person providing the information or on whose behalf it is provided; and
    - the disclosure of the information would likely interfere with contractual or other negotiations being conducted by the person providing the information or on whose behalf it is provided.

Data presented in the 2002 NPRI National Overview Series do not include the confidential information listed above.

A request for confidentiality will be denied if the data are already in the public domain.

2.9 Factors to Consider When Using NPRI Data

NPRI data provide publicly available annual records of on-site releases and off-site transfers of listed pollutants from facilities operating in Canada. However, NPRI data represent only a portion of all chemical releases and transfers to the Canadian environment. Other substances, such as greenhouse gases (e.g., carbon dioxide and methane), many pesticides and other pollutants, are not part of the current list of NPRI substances, but may be reported to other inventories or managed under other programs.

While the NPRI program currently collects data on pollutants from a broad range of industrial and non-industrial sectors, not all sources are reported to the NPRI. For example, industrial and stationary sources of fuel combustion and mobile sources (such as cars and trucks) are known to be major contributors of hazardous air pollutants (e.g., benzene and 1,3-butadiene, both of which are CEPA-toxic pollutants). Long-range transboundary air pollution from other countries may be a contributor of persistent organic pollutants, such as dioxins and furans, and heavy metals, such as mercury.

Some facilities are not required to report to the NPRI because of the number of employees or the quantity of substances used, as in the case of dry cleaners, or because they are exempt, as in the case of most gas stations. Collectively, however, such sources may account for a significant portion of releases of some pollutants.

For that reason, releases of a particular pollutant by a facility reporting to the NPRI should be considered in relation to other pollutants, other sources and smaller facilities.

Several factors must be considered before drawing conclusions about the environmental performance of specific facilities or industrial sectors. In examining the amount of total releases of any one sector or changes in releases by a facility from previous years, consideration should be given to the fact that the NPRI list of substances and reporting criteria may change from year to year. In addition, it is important to consider more than just the size of releases. The amounts released in relation to the size of the facility or sector should be considered, as well as the complexity of the process and the control technologies available. It would be incorrect to assume that facilities or industrial sectors with the largest releases or transfers are less inclined towards pollution prevention and control.

Risk to human health and the environment from on-site releases of pollutants cannot be determined from NPRI data alone. The determination of risk to the environment and human health is a complex process that requires an understanding of many pieces of information, including the physical and chemical properties of the pollutant; its ability to cause harm to the environment or human health; the medium to which it is released (air, water or land); how, when and where it is broken down; and the extent to which people or other organisms are actually exposed.

For further information about risk assessment, please refer to publications available from Environment Canada and Health Canada's Existing Substances Division.

Double counting is an issue that needs to be considered when attempting to add NPRI pollutants releases and transfers. It is important to understand that there is no double counting of releases and disposal on site, whereas transfers may be counted more than once. In **table 2–3**, for example, facility A transfers approximately 25 tonnes of manganese (and its compounds) deemed to be a waste material by facility A to facility B (a transfer facility). Facility B then transfers the same 25 tonnes of manganese (and its compounds) to facility C, which proceeds to landfill this material. In addition, facilities A, B and C file reports to NPRI. In this example, it is important to note that *only 25 tonnes* (and not 50 tonnes) of manganese and its compounds in total are transferred off site from facility A to facility B and then to facility C.

Table 2–3

EXAMPLE OF DOUBLE COUNTING

Facility A	Facility B	Facility C
Processes manganese	Transfer facility only	Landfill facility
Transfers: 25 tonnes of manganese waste to off-site landfill	Transfers: 25 tonnes of manganese waste off site to landfill at facility C	Landfills: 25 tonnes of manganese waste
The total amount of manganese and its compounds transferred off site to a landfill from facility A through facility B and into facility C is 25 tonnes and not 50 tonnes		

Double counting must also be guarded against in connection with releases of CACs from a particular facility. For example, a facility may report emissions of all three particulate matters (TPM, PM_{10} and $PM_{2.5}$). But it would be a mistake to add these substances together in order to estimate total releases of particulate matter from the facility because TPM includes releases of PM_{10} and $PM_{2.5}$. Special attention is also required when attempting to estimate releases of VOCs from a facility. For example, 120 VOC substances are already listed on the NPRI substance list, but a facility may also be required to report releases of total VOCs, which are already included under the NPRI pollutant list. Therefore, it would be inaccurate to add the two together.

2.10 Reporting to Other Inventory Programs

2.10.1 Environmental Performance Agreements (EPAs)

In June 2001, Environment Canada published the *Policy Framework for Environmental Performance Agreements*. EPAs are non-regulatory voluntary agreements which meet certain criteria and have been negotiated among parties to achieve specific environmental results. Environment Canada has incorporated the reporting requirements for EPAs into the NPRI reporting software.

2.10.2 Ontario Ministry of the Environment

In May 2001, the Ontario Ministry of the Environment (ON MOE) issued the *Airborne Contaminant Discharge Monitoring and Reporting Regulation* (O. Reg. 127/01) under the authority of the Ontario *Environmental Protection Act*. In response to requests from industry for a one-step method of reporting to inventories, Environment Canada worked with the ON MOE to include the reporting from O. Reg.127/01 on the NPRI reporting form.

2.10.3 Alberta Environment

As of June 2002, the NPRI has been used as a pilot mechanism to collect information for CAC on behalf of Alberta Environment to support its *Environmental Protection and Enhancement Act* approvals. A separate guidance document is available.

2.10.4 Canadian Chemical Producers' Association (CCPA)

The National Emissions Reduction Master plan (NERM) requires emission reporting from the CCPA membership. NPRI has collected this information on behalf of CCPA since 1993.

3. References and Bibliography

3.1 Government of Canada

Canadian Environmental Protection Act, 1999. Statutes of Canada 1999. Chapter 33. Act assented to 14 September 1999.

Environment Canada. *Guide for Reporting to the National Pollutant Release Inventory 2002.* Ottawa: Minister of Public Works and Government Services Canada, 2002.

Environment Canada. *2001 National Overview: Final Disposal and Off-site Transfers for Treatment Prior to Final Disposal: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Highlights: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Recycling and Energy Recovery: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Releases: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Reporting Requirements: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Summary of 2001 Data: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. "Notice with Respect to Substances in the National Pollutant Release Inventory for 2002." *Canada Gazette,* Part I, December 29, 2001.

Environment Canada. "Notice with Respect to Substances in the National Pollutant Release Inventory for 2001 – Amendment." *Canada Gazette,* Part I, December 29, 2001.

Environment Canada. *Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000.* Ottawa: Minister of Public Works and Government Services Canada, 2001.

Statistics Canada. *North American Industry Classification System (NAICS) Canada Manual 1997.* Catalogue 12-501-XPE, Ottawa: Statistics Canada, 1998.

Statistics Canada. *Standard Industrial Classification – 1980.* Catalogue 12-501-E, Ottawa: Statistics Canada, 1989.

3.2 Web Sites for Substance Information

3.2.1 Environment Canada

The Green Lane: **www.ec.gc.ca**

National Pollutant Release Inventory On-line Data Search: **www.ec.gc.ca/npri**

CEPA Environmental Registry: **www.ec.gc.ca/CEPARegistry**

New and Existing Substances: **www.ec.gc.ca/substances**

List of Toxic Substances (Schedule 1 of CEPA 1999): **www.ec.gc.ca/CEPARegistry/subs_list/Toxicupdate.cfm**

Management of Toxic Substances: **www.ec.gc.ca/toxics**

Mercury: **www.ec.gc.ca/mercury**

3.2.2 Health Canada

Existing Substances Division: **www.hc-sc.gc.ca/hecs-sesc/exsd/index.htm**

3.2.3 International Links

Agency for Toxic Substances and Disease Registry (ATSDR): **www.atsdr.cdc.gov**

Chemfinder: **chemfinder.cambridgesoft.com**

Commission for Environmental Cooperation (CEC): **www.cec.org**

Environmental Defense Scorecard: **www.scorecard.org**

International Agency for Research on Cancer (IARC): **www.iarc.fr**

International Programme on Chemical Safety (IPCS): **www.inchem.org**

National Toxicology Program (NTP): **ntp-server.niehs.nih.gov**

Organization for Economic Co-operation and Development (OECD): **www.oecd.org/home**

PollutionWatch: **www.pollutionwatch.org**

United Nations Environment Programme (UNEP): **www.unep.org**

World Health Organization: **www.who.int**

3.3 Additional Sources of Information

Agency for Toxic Substances and Disease Registry (ATSDR)
1600 Clifton Road (E29)
Atlanta, GA 30333
U.S.A.
Tel.: (404) 639-6300
Fax: (404) 639-6315
Web site: **www.atsdr.cdc.gov**

Canadian Centre for Occupational Health and Safety Chemical Evaluation Search and Retrieval System (CESARS)
250 Main Street East
Hamilton, ON L8N 1H6
Tel.: (905) 570-8094
Fax: (905) 572-2206
Web site: **www.ccohs.ca/products/databases/cesars.html**

Commission for Environmental Cooperation (CEC)
393 St. Jacques Street West
Suite 200
Montreal, QC H2Y 1N9
Tel.: (514) 350-4300
Fax: (514) 350-4314
Web site: **www.cec.org**

Health Canada
Publishing Coordinator
Environmental Health Centre
Tunney's Pasture 0801B3
Ottawa, ON K1A 0L2
Tel.: (613) 957-3143
Fax: (613) 941-8632
Web site: **www.hc-sc.gc.ca**

International Agency for Research on Cancer (IARC)
150 cours Albert Thomas
F-69372 Lyon cedex 08
France
Tel.: +33 (0)4 72 73 84 85
Fax: +33 (0)4 72 73 85 75
Web site: **www.iarc.fr**

National Library of Medicine (TOXNET)
8600 Rockville Park, Bldg. 38A
Bethesda, MD 20894
U.S.A.
Tel.: (301) 496-6531
Fax: (301) 480-3537
Web site: **www.nlm.nih.gov/hinfo.html**

Appendix A: Overview of the NPRI

The National Pollutant Release Inventory (NPRI) is at the centre of the Government of Canada's efforts to track toxic substances. It is a legislated inventory of pollutants released to the environment. The NPRI was established in 1992 to inform Canadians about releases of pollutants from facilities located in their communities, including the amounts discharged to air, water and land and by underground injection and the amounts sent to other facilities for disposal, treatment or recycling and energy recovery. It also supports a number of environmental initiatives by providing information that:

- helps governments and others to identify priorities for action;
- encourages industry to take proactive measures to reduce releases;
- allows for tracking of progress in reducing releases;
- supports international commitments; and
- provides information used in the development of new preventive or control instruments such as codes of practice, regulations and guidelines.

The NPRI is a constantly evolving program. Consultation with the public and stakeholders has become an integral part of the changes to the program. Since the NPRI was set up, substances have been added and deleted, the thresholds at which substances are reported have been adjusted and the scope of the inventory has been expanded to collect data on recycling and preventing pollution. Further refinements are planned for future years.

The NPRI program is administered by Environment Canada under the authority of the *Canadian Environmental Protection Act, 1999* (CEPA 1999). Owners or operators of facilities that manufacture, process, or otherwise use one or more of the NPRI-listed substances under prescribed conditions are required to submit an annual report to Environment Canada on the releases and transfers of those substances.[1] See **Appendix B** for definitions of releases, disposals and transfers.

All non-confidential information collected by the NPRI is available to the public on Environment Canada's Web site in the form of downloadable databases, reports and analyses, and through a linked query site that allows the user to view information submitted by an individual facility. See **www.ec.gc.ca/npri** or contact your nearest NPRI office.

What's New for the 2002 NPRI?

The following changes were made to the NPRI for the 2002 reporting year:

Addition of New Substances

- Hexavalent chromium compounds
- Criteria air contaminants (CAC)
  - Carbon monoxide (CO)
  - Oxides of nitrogen (NO_x)
  - Sulphur dioxide (SO_2)
  - Particulate matter (PM)
    - equal to or less than 2.5 microns in diameter ($PM_{2.5}$)
    - equal to or less than 10 microns in diameter (PM_{10})
    - total particulate matter (TPM)
  - Volatile organic compounds (VOCs)

[1] *The requirements for the 2002 NPRI were published in the* Canada Gazette, *Part I, on December 29, 2001.*

Changes in Mass and Concentration Thresholds

- Cadmium (and its compounds): The threshold for reporting based on mass was reduced from 10 tonnes to 5 kg and 0.1% concentration.
- Arsenic (and its compounds), lead (and its compounds), hexavalent chromium and tetraethyl lead: The threshold for reporting was based on mass reduced from 10 tonnes to 50 kg and 0.1% concentration.
- Chromium (and its compounds) no longer includes hexavalent chromium.

Changes Where Employee Threshold (20 000 hours) Does Not Apply

- Throughput was reduced from 100 to 26 tonnes per year for incineration of non-hazardous, solid waste, biomedical and hospital waste.
- Terminal operations (for storage or transfer of crude and refined petroleum products).
- Discharges from wastewater collection systems of 10 000 m^3 or more into surface waters.

Changes to Exemptions for Specific Facilities

- Painting, stripping or rebuilding components for maintenance and repair of transportation vehicles is now included in the NPRI.
- Terminal operations used in the distribution or storage of fuels for retail sale are now included in the NPRI.

Pollution Prevention

- Reporting of pollution prevention activities has been expanded.

Administrative Changes

- Facilities that reported in 2001 must notify Environment Canada if they are not reporting for 2002.

Changes in Definitions

- Facility – now includes pipeline installation.
- Other use – includes use or disposal.

NPRI Substance List for 2002

For the 2002 reporting year, 273 substances were listed on the NPRI, 82 of which were determined to be toxic under CEPA 1999. There were 241 substances listed with the original 1993 NPRI reporting criteria of 10 tonnes and 1% concentration, excluding by-products. Thirty-two substances were listed with different reporting criteria – mercury, cadmium, arsenic, lead and their compounds, hexavalent chromium compounds, tetraethyl lead, 17 individual polycyclic aromatic hydrocarbons (PAHs), polychlorinated dibenzo-*p*-dioxins/polychlorinated dibenzofurans (dioxins/furans), hexachlorobenzene (HCB), and seven CAC.

The CAC were added to the NPRI for the 2002 reporting year. As a result, the total number of substance reports submitted for the 2002 NPRI almost doubled compared to 2001. Information on CAC is summarized separately from other NPRI substances, which are referred to as "NPRI pollutants".

The total list of NPRI substances for the 2002 reporting year can be found on the NPRI Web site at **www.ec.gc.ca/npri**.

2002 National Overview Series

The 2002 NPRI National Overview (referred to as the "2002 National Overview") consists of the following series of documents:

- 2002 National Overview – Reporting Requirements;
- 2002 National Overview – Summary of Data;
- 2002 National Overview – On-site Releases of NPRI Pollutants;
- 2002 National Overview – Final Disposal and Off-site Transfers for Treatment Prior to Final Disposal; and
- 2002 National Overview – Off-site Transfers for Recycling and Energy Recovery.

The 2002 National Overview Series includes data as they appeared in the NPRI database on December 18, 2003.

In addition to the National Overview Series, Environment Canada has another report entitled *Informing Canadians on Pollution*. This report is a snapshot of pollution from industrial and commercial companies in Canada. In addition to describing progress on sector and pollutant releases and disposal and recycling trends, this report includes special sections on toxic substances, pollution prevention, managing pollution in Canada, and tips on how communities and individuals can use the NPRI.

New Groupings for Releases and Transfers

The following groupings were used to summarize information collected through the NPRI for the 2001 reporting year and continued for the 2002 reporting period:

- On-site Pollutant Releases
  - air
  - water
  - land: includes spills, leaks and other
- Disposal
  - on-site disposal: landfill, land treatment and underground injection
  - off-site disposal: landfill, land treatment, underground injection and storage
  - off-site transfers for treatment prior to final disposal:
    - physical treatment
    - chemical treatment
    - biological treatment
    - incineration or thermal treatment where energy is not recovered
    - treatment at a municipal sewage treatment plant (MSTP)
- Off-site Transfers for Recycling and Energy Recovery
  - recycling
  - energy recovery

As a result of consultations with stakeholders, new groupings were developed for on-site releases. It should be noted that "releases to land" no longer include disposal. The new groupings are different from those found in the *Guide for Reporting to the National Pollutant Release Inventory 2002*. In 2003, these changes were included in the *Guide for Reporting to the National Pollutant Release Inventory 2003* and the software for reporting to the NPRI.

Appendix B: Detailed Data Elements Reported to the NPRI

On-site Releases

An on-site release is a discharge of an NPRI-listed pollutant to the environment, within the physical boundaries of the facility. This includes:

- emissions to air – discharges through a stack, vent or other point release, losses from storage and handling of materials, fugitive emissions, spills and accidental releases, and other non-point releases;
- releases to surface waters – discharges, spills and leaks, but not including discharges to municipal wastewater treatment plants (which are reported under off-site transfers for treatment); and
- releases to land – spills, leaks and other.

Final Disposal Activities – On Site and Off Site

The following activities or operations are included in the category classified as "final disposal" – on site and off site:

- containment – two forms of containment are identified:
  - i) landfill; and
  - ii) other storage;
- underground injection at an off-site location;
- land treatment – for the purpose of land application or land farming; and
- off-site final disposal for storage.

Off-site Transfers for Treatment Prior to Final Disposal

A shipment of an NPRI-listed substance may be transferred to an off-site location for treatment prior to final disposal. The treatment processes include:

- physical treatment (e.g., drying, evaporation, encapsulation or vitrification);
- chemical treatment (e.g., precipitation, stabilization or neutralization);
- biological treatment (e.g., bio-oxidation);
- incineration or thermal treatment where energy is not recovered; and
- treatment at a municipal sewage treatment plant.

Off-site Transfers for Recycling and Energy Recovery

A shipment of an NPRI-listed substance may be transferred to an off-site location for recycling and energy recovery. "Recycling" refers to activities that keep a material or a component of the material from becoming a waste destined for final disposal. Nine types of recycling operations are identified:

- recovery of solvents;
- recovery of organic substances (other than solvents);
- recovery of metals and metal compounds;
- recovery of inorganic materials (other than metals);
- recovery of acids and bases;
- recovery of catalysts;
- recovery of pollution abatement residues;
- refining or reuse of used oil; and
- other recovery, reuse or recycling activities.

An NPRI substance may be sent for energy recovery when the substance or the material containing it has sufficient energy content (BTU value) to allow its use as an alternative to fossil fuels or other forms of energy.